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ABSTRACT

This document contains a literature review and discussion focusing on general tactical issues involved in research on modeling and verbal behavior. Five basic issues were identified: (1) It is necessary to distinguish between acquisition of new responses and performance of those already in the repertory. (2) The relationships between the modeled behavior and the responses expected of the subject should be examined through investigations of the extent to which exposure to the model can affect diverse response classes to diverse stimuli, particularly with linguistic, problem solving, and creative tasks. (3) The amount of structure given to subjects varies greatly in the literature, with regard to explicitness of instructions and type of task used. (4) There has been little uniformity in choosing dependent variables. Many kinds of verbalizations, grammatical parameters, and more unusual behavioral dimensions (i.e., attitudes) have been used. (5) Finally, many commonly used terms (i.e., creative response) need to be defined somewhat arbitrarily, for the sake of standardization. (DP)

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# Issues in Modeling of Verbal Behaviors

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A number of general tactical issues are involved when doing research on modeling and verbal behavior. The first question to consider is whether the research concerns acquisition of new responses not in the subject's repertoire or performance of previously learned ones. Although a number of studies have attempted to teach a new concept to children through modeling (Rosenthal, Alford, and Rasp, 1972; Rosenthal, Feist and Durning, 1972, Rosenthal, Moore, Dorfman & Nelson, 1971; Zimmerman and Rosenthal, 1972a, 1972b), only two studies have attempted to assess the influence of modeling in teaching new linguistic rules (Liebert, Odum, Hill & Huff, 1969; Odom, Liebert and Hill, 1969). The problem that arises is that all studies have dealt with children who spoke adequate English and therefore a new rule is subject to interference from previously learned grammatical rules, as the previous studies discovered. Even if something like vocabulary is used, decisions must be made as to whether foreign vocabulary words, nonsense words, or words so abstruse as to be presumably unknown to the subjects would serve as the responses to be modeled. For this reason, the overwhelming majority of studies have looked at applications of presumably learned responses to new situations-- in other words, at performance, rather than acquisition. Exceptions were the work of Freedle, Keeney and Smith (1970) and Love and Parker-Robinson (1971), who investigated the verbal behavior of nursery

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school children and found that they could imitate grammatical English sentences more accurately than ungrammatical ones. Since the two most important practical applications of modeling verbal behaviors are probably in the areas of foreign language instruction and grammar teaching, it is clear that studies of both acquisition and performance of modeled verbal behaviors are important.

A second issue to be considered is the relationship between the modeled behavior and the response expected of the subject. Several studies, for example, expected precise imitation of the model's behavior (e.g. Freedle et. al., 1970; Love & Parker-Robinson, 1971; Zimmerman & Rosenthal, 1972b; Rosenthal & Zimmerman, 1972a). A number of these and other studies looked for generalization to somewhat different stimuli as well. Still others presented the same stimuli to the model and subject but did not require that the response be identical to be scored as imitative; many of this group of researchers also presented a new set of generalization stimuli to S (e.g. Carroll, Rosenthal and Brysh, 1972; Rosenthal & Whitebook, 1970; Rosenthal & Zimmerman, 1972b; Grieshop & Harris, 1973; Rosenthal, Zimmerman & Durning, 1970). Still others presented the subject with stimuli that were similar to those given the model but in no case identical (e.g., Bandura & Harris, 1966, Harris & Hassemer, 1972; Harris & Fisher, in press; Rosenbaum & Arenson, 1967); these were roughly equivalent to those used as generalization stimuli in other experiments.

A couple of studies looked at the effects of modeled behaviors on even less similar responses. Marlatt (1970) had Ss listen to a tape-recorded interview and then evaluated their own verbal behavior during a counseling interview, Harris & Evans (1973a,b) exposed Ss to a written model using divergent or convergent thinking (or to no model) on an unusual uses task and looked at responses to other tests of creative behavior which were quite different in form. Thus both stimulus generalization and response generalization have been explored in various studies. It seems to the author, however, that not enough studies of generalization have yet been done. It has been shown adequately, I think, that Ss can learn to perform a specific response which they have seen modeled to a specific stimulus. What are needed are more investigations of the extent to which exposure to a model can affect diverse classes of responses to diverse stimuli, particularly those linguistic, problem-solving and creative behaviors so relevant to the classroom situation.

A third issue to consider is the amount of structure given to the Ss about what is expected of them. In some studies, Ss have been directly asked to copy or imitate the model's responses (e.g., Freedle et. al., 1970; Love & Parker-Robinson, 1971; Rosenthal and Whitebook, 1970). Other studies have varied the amount of specificity of the instructions as an independent variable, so that Ss in some conditions were asked to imitate and those in other conditions were not (e.g., Rosenthal and Carroll, 1972; Rosenthal & Zimmerman, 1972b; Rosenthal, Zimmerman & Durning, 1970; Rosenthal & White, 1972). Other studies used a model more incidentally with instructions to S to observe the model and then to do as well as

he could (e.g., Rosenthal, Alford & Ra p, 1972; Rosenthal, Feist & Durning, 1972). Even less explicit pressures to imitate were found in studies in which Ss were told to figure out correct sentences (Bandura and Harris, 1966) or to pick the correct cards (Zimmerman & Rosenthal, 1972a) but without any suggestions that the model was exemplifying the correct behavior. Marlatt (1970) went a step further by presenting a taped model of an interview, supposedly to familiarize Ss with the situation but with no mention made at all that Ss were supposed to behave as the model did. In several other projects the model was also presented as incidental or unimportant without even implicit hints that he be imitated (Harris & Fisher, in press; Harris & Evans, 1973a, 1973b; Rosenbaum & Arenson, 1967; Rosenthal & Hertz, in press). Harris & Hassemer (1972) for example gave neither instructions to imitate, instructions to observe, nor suggestions that some answers were correct. Finally, field studies have been conducted in which the Ss were totally unaware that they or the models were participating in an experiment (Harris, 1973; Harris, Liguori & Stack, in press).

Not only the explicitness of the pressure to imitate but also the degree of structure to the task itself has varied. In some studies, Ss have been asked to choose from a predetermined array of stimuli (e.g., Rosenthal & Carroll, 1972; Rosenthal & White, 1972); in others they have been asked to give an open-ended response to a number of predetermined stimuli (e.g. Bandura & Harris, 1966; Harris & Hassemer, 1972; Harris & Evans, 1973a, 1973b); in others they have been asked to respond

in a somewhat ambiguous situation (Marlatt, 1970) or have not even known that a response was expected of them (Harris, 1973; Harris et. al., in press). Since imitation in situations with a very clear task and very explicit instructions to imitate is not particularly surprising, future research might be more valuable if it concentrated on imitation in less structured situations, where the demand characteristics are not so clear.

Possibly the most important issue to consider is the selection of a dependent variable. An extremely large number of measures involving verbal behavior have been used in modeling studies. Among them are the choice of language (Spanish or English, Harris & Baudin, 1973), the overall length and complexity of the response (Harris & Hassemer,1972), the type of questions asked (Rosenthal, Zimmerman & Durning, 1970; Rosenthal and Zimmerman, 1972b), responses dealing with problem disclosure in an interview (Marlatt, 1970), learning of various concepts (Zimmerman & Rosenthal, 1972a, 1972b; Rosenthal, Alford & Rasp, 1972; Rosenthal, Moore, Dorfman & Nelson, 1971), Piagetian conservation (Rosenthal & Zimmerman, 1972 a), imitation of the specific words used or chosen by M (Freedle et. al., 1970; Carroll et. al., 1972; Rosenthal & Whitebook, 1970) or of the general content of sentences which directly or indirectly expressed an opinion or valuational statement (Grieshop & Harris, 1973). A variety of grammatical parameters have also served as dependent measures, including prepositional phrases (Bandura & Harris, 1966; Liebert et. al., 1969; Odom, et. al., 1969), verb tense (Carroll, et. al., 1972; Rosenthal & Whitebook, 1970, Rosenthal & Carroll, 1972), sentence structure (Carroll et. al., 1972; Rosenthal & Whitebook, 1970; Love, 1970), complex sentences

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(Rosenthal & Carroll, 1972) and relative clauses (Grieshop & Harris, 1973). In addition, a number of more unusual measures have been used, such as perceptions of inkblots (Rosenthal & Hertz, in press), verbal aggressive responses (Harris, 1973; Harris, et. al., in press), attitudinal changes toward a phobic object (Bandura, Blanchard & Ritter, 1969), solutions to anagrams (Harris & Fisher, in press), solutions to water jar problems (Rosenbaum & Arenson, 1967), and responses to a variety of tests of creativity, such as unusual uses, picture description, story completion, and speculation (Harris & Evans, 1973a, 1973b). Since with all these tasks effects of viewing a model have been demonstrated, it appears very clear that a large number of verbal behaviors are amenable to modeling influences.

A final methodological issue to be considered is that of scoring protocols. Obviously the particular problems which arise are often very specific to the individual measure investigated. For instance, some of the grammatical measures used have not been independent of semantic connotations (e.g., plurals and verb tenses). In other cases imitation of a single word or morpheme might have sufficed to cause responses which would be scored as imitative of M's grammar or content ("like" for valuational questions or statements, "--ing" for the present progressive tense, "had" for the pluperfect). Very often in scoring verbal behaviors a list of all correct responses cannot be set up ahead of time. This means that somewhat arbitrary definitions must be constructed. For instance, a normative sample might be used in arriving at a definition

of unusual or creative responses. If a subject uses the correct grammatical construction in an ungrammatical sentence, how should that be scored? What about errors of pronunciation and spelling? Generally a substantial degree of training of observers or coders is needed with extensive reliability checks to assure that the scoring system is reliable.

Overall, the results of the studies have been very consistent in showing that a large number of verbal behaviors can be affected by modeling. Investigations of both acquisition and performance which look at both stimulus and response generalization in relatively unstructured situations should extend our knowledge of modeling still further. A large number of potential variables remain to be explored and it is hoped that consideration of the issues mentioned here will facilitate these investigations.

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